REPORT OF THE CONDITION AND PROGRESS

OF THE

MUSEUM OF IRISH INDUSTRY

AND THE

GOVERNMENT SCHOOL OF SCIENCE APPLIED TO MINING AND THE ARTS, DUBLIN,

For the Year 1857,

BY

SIR ROBERT KANE, F.R.S., M.R.I.A., DIRECTOR.

REPORT of the CONDITION and PROGRESS of the MUSEUM OF IRISH INDUSTRY and the GOVERNMENT SCHOOL OF SCIENCE APPLIED TO MINING AND THE ARTS, DUBLIN, for the Year 1857, by Sir ROBERT KANE, F.R.S., M.R.I.A., Director.

DURING the past year considerable further progress has been effected in the arrangement and classification of the collections, and several important additions have been made by means of donations and purchases, whereby the value of the technological departments has been much increased, and the illustrations rendered more complete and more satisfactory to the student.

Amongst the more interesting of those acquisitions, I would specify the series of specimens exhibiting the several stages and varieties of the manufacture of steel, together with models of the furnaces and machinery employed. These have been furnished to the Museum by Messrs. Naylor, Vickers, and Co., of Sheffield, to whose liberality and intelligent co-operation this recognition is justly due.

A very extensive and beautifully arranged series of illustrations of the manufacture of steel pens has been received from J. Gillott, Esq., for whose useful assistance I have similarly to return thanks, as well as for a complete series illustrating all the stages and varieties of the manufacture of needles, received from Messrs. Cocker and Sons, and a series illustrating the different qualities of steel, and their application to the manufacture of springs, and other articles from the same firm.

A very extensive and complete series of illustrations of the materials, processes, and products of the earthernware manufacture in all its varieties, as carried on in Staffordshire, has been obtained from Messrs. Wedgwood. This collection is accompanied by a series of models of the baking kilns, and enamelling and glazing furnaces, and the various tools and machines employed in making pottery. The collection so formed constitutes an admirable representation of that important branch of British industry, and being selected and contributed by that firm, itself so illustrative of the history and success of a manufacture combining scientific principles with artistic taste in the highest degree, the collection exhibits the benefit to practical industry which this institution is calculated to afford in an eminent degree.

A very interesting series of specimens illustrating the manufacture and applications of German (Nickel) silver has been presented to the Museum by David Forbes, Esq., on the part of the Messrs. Evans and Aitken, Birmingham, and a series of specimens of electrotyping, as effected by a new and improved process, have been received as donations from the Abbé Moigno, of Paris.

There have been added to the collection of models of textile machinery, three models, viz., of a silk winding machine, a linen

measuring and folding machine, and the machine for preparing the silk warps for poplin weaving.

A large collection of fossils has been received from Sir Roderick Murchison, Director-General of the Geological Survey, and is now in progress of arrangement in the Palæontological Department of the Museum, under the direction of the Lecturer on Geology, Mr. Jukes, Local Director of the Geological Survey.

A number of specimens of vegetable products have been received from the Royal Dublin Society.

A very interesting collection of specimens of earthenware and porcelain, illustrating various epochs and varieties of that manufacture, has been received from the Museum of the Department of Science and Art in London, and also the first portion of a collection of specimens of mineral and vegetable materials and products, presented by the Royal Commissioners of the Exhibition of 1851. These two collections I have not yet officially placed in charge of the Curator for arrangement with the other collections in the Museum galleries, as it was necessary that the work on which that officer has been latterly engaged should first be terminated. I have, however, myself in the meantime examined and verified the collection of pottery and earthenware, and the arrangement of the others will proceed without delay.

The system of full descriptive labelling, which was from the commencement carried out in this Museum, is being proceeded with according as the final arrangement of the different collections is effected. In order, however, to afford the fullest possible information to visitors of the Museum, a general descriptive catalogue, of which a copy is annexed, Appendix A., has been prepared by the officers of the Museum, in which the objects and nature of the institution and its general arrangements are popularly explained, and the principal heads of classification of the collections and the more important groups of objects are described. This catalogue is accompanied by lithographed plans of the Museum and galleries.

The receipt of a number of specimens from the British and Irish coal fields necessitated the re-arrangement of the collections of fossil fuel and iron ores. This has been done, and that department of the Museum is now in very satisfactory condition.

From the great importance of a proper knowledge of minerals to the geological and chemical student, it was found necessary to take in hands the entire re-arrangement of the collection of minerals, which having been formed at different times, and in a very fragmentary manner, was destitute of unity of classification, although its individual portions were valuable, and the number of specimens very great. This work has occupied the Curator during a great portion of the past year, and is not yet complete, although very nearly so. When it is terminated we shall undertake the final arrangement of the historical ceramic collections and the collection of vegetable products, for which considerable materials have been received, as already noticed.

The series of models of fishing boats and implements, as nets, &c., employed in the fisheries of the Irish coast, has been refitted and

arranged, and also an interesting series of models of the lines of construction of the fishing boats employed on the south coast of Ireland. A commencement has thus been made of the collection illustrative of the natural and industrial history of the Irish fisheries, a department of the Museum which, when complete, will probably be found one of the most popularly interesting as well as practically instructive.

Further details as to the donations received and the purchases made will be found in the special report of the Curator, and the lists of donations and purchases, which I have the honour to annex, Appendix B., C., and D.

The Museum galleries were open to the public on week-days from 11 until 4 o'clock, during which time there visited the Museum, from the 1st January to the 31st of December, 19,774 persons.

The galleries were also open to the public in the evenings on which lectures were delivered from 7 until half-past 9 o'clock, and the number of evening visitors was 8,651, making the total number of visitors to the Museum within the year 28,425.

Chemical Department.

Mr. Robert Galloway having entered upon his duties as Chemist to the Museum and Lecturer on Practical Chemistry in January last, entered at once upon the arrangements for the class instruction of the students, and has occupied himself since that time, and with great zeal, in the duties of his office. The organization of the class of practical chemistry has been attended with great success, as will be detailed further on, and in the analytical department of the laboratory Mr. Galloway has commenced a number of analyses of rocks for the purpose of the geological survey, and also the analysis of a series of specimens of the principal classes of metallic ores in the Museum collections, such as had been commenced, but left incomplete, by the previous chemical officers. In these latter analytical investigations, Mr. Galloway proposes to avail himself of the assistance of some of the senior students of the practical chemistry class, to whom it will afford the best possible field for practice in their higher chemical studies, whilst at the same time they will materially co-operate in increasing the usefulness of the Museum collections as means of instruction for the public, as the results of all such analyses will be exhibited on the descriptive labels of the specimens.

Library.

The library of the Museum has been open in the evenings during the session, and was attended by 735 persons, giving an average attendance of 5 persons on each night. None but registered students of the Government School of Science are admitted to read in the library.

Government School of Science applied to Mining and the Arts.

The arrangements for systematic instruction in the industrial sciences have been carried out by the several professors and

officers during the past year with praiseworthy zeal and with considerable success. The general plan of the courses of lectures was similar to that described in detail in my last report, to which I beg leave to refer, and I have the honour to annex, Appendix E., a copy of the Official Programme for the Session 1857–58, in which full information as to the proceedings of the current session will be found. I beg to express my sense of the friendly co-operation afforded by the officers of the Royal Dublin Society in the arrangements necessary for those systematic courses for the delivery of which the lecture theatre of that institution was availed of; and I have also to acknowledge the assistance afforded by furnishing specimens from the collections of that institution for illustration of the courses of lectures delivered in the theatre of the Museum of Irish Industry.

In my last report, I described the proceedings of the Session 1856–57, up to the 31st December 1856, being the date of preparation of that report. I have now the honour to state in continuation, that on the 5th January 1857, Dr. William Barker resumed the delivery of his course of lectures on physical science in the theatre of the Museum of Irish Industry. This portion of the course consisted of 20 lectures, for which a fee of 3*s.* 6*d.* was paid. It was delivered in the afternoon at 4 o'clock, 37 tickets of admission were sold, the average attendance was 30, and at the examination for prizes at the termination of the course, 17 persons competed.

Dr. Sullivan resumed the delivery of his systematic course of lectures on chemistry at 4 o'clock, afternoon, on the 2nd February 1857. This course consisted of 20 lectures, for which a fee of 3*s.* 6*d.* was charged, 30 admission tickets were sold. The average attendance was 16, and 12 students competed for prizes at the examination of the class when the course had terminated.

Professor Jukes resumed the delivery of his course of day lectures on geology on March 2nd, 1857, the course was given at 4 o'clock p.m., and consisted of 20 lectures, for which a fee of 3*s.* 6*d.* was paid. 59 tickets were sold and the average attendance was 52. At the examination for prizes at the end of the course 11 students competed.

An evening course of instruction in practical chemistry, consistsisting of 60 lectures and demonstrations, was commenced by Mr. Galloway in February, and continued until June; each lesson lasting two hours, from 7 to 9. This course was attended by 15 pupils, and the average attendance was 13. At the end of the course an examination was held of the class, which lasted six evenings; 9 students competed. The answering is described by Mr. Galloway in his report annexed, Appendix F., to have been extremely satisfactory, and he expresses himself in terms of strong approbation of the amount of work which the pupils had done. In those sentiments I beg to state that I fully concur.

By an arrangement approved by the heads of the department, the professorship of natural history has been since last report divided into separate chairs of zoology and of botany, to the former of which Dr. Kinahan has been appointed, whilst Dr. Harvey has

retained the chair of botany. Accordingly, in the last session separate courses of lectures on those branches of science were given by the respective professors, as fully detailed in the programme.

Dr. Kinahan resumed his course of day lectures on March 30th 1857, at 4 o'clock. The course, consisted of 20 lectures, for which a fee of 3*s.* 6*d.* was paid. 27 tickets were sold, and the average attendance was 19. At the examination on the close of the course 7 students competed.

On Monday, May 4th, Dr. Harvey commenced the systematic course of 20 lectures on botany. These lectures were delivered on the premises of the Royal Dublin Society, and a portion of them in the Botanic Gardens. For this course a fee was charged to registered students of 6*d.*, and 47 tickets were sold. The average attendance was 62. At the termination of the course the prize examination was held, and 7 students competed.

When the systematic courses of lectures had terminated, the general examination in all the subjects of those five courses was held. At this examination 6 students competed.

After each class examination, and at the close of the general examination, prizes and certificates were adjudged to those of the candidates who had shown such proficiency in the subjects as the professors considered satisfactory. The number and nature of the prizes and certificates given, and the names of those who obtained prizes, will be found in Appendix G., together with copies of the examination papers, Appendix J.

The answers of the students who had obtained the first place in each of the special classes and in the general examination having been submitted to the heads of the department, their Lordships were pleased to express their approval of the high degree of proficiency manifested by those answers, and to award as a further honor in each of the special classes, the bronze medal of the department, and for the general examination the silver medal.

The names of the medallists will be found in Appendix G.

The session was closed on June the 17th, by a meeting for the purpose of conferring the several prizes and rewards which had been obtained. The meeting was honoured with the presence of his Excellency the Earl of Carlisle, Lord Lieutenant, who manifested the most friendly interest in the success of the students and the progress of the institution. His Excellency kindly himself conferred the honours upon the successful competitors, and in so doing observed upon the value of such rewards for intellectual merit, in a manner most interesting to the students and to the assemblage.

The meeting was attended by 600 persons, and an explanation of the general nature and objects of the system of industrial education was given by me in a short address, previously to the distribution of the prizes by his Excellency. I have the honour to annex, forming Appendix H., an account of the proceedings of that meeting, as reported at the time.

The business of the session now current was commenced on Thursday, 8th October, when I delivered an address on the recent progress of the industrial sciences, in the theatre of the Museum of Irish Industry, which was attended by 360 persons.

REPORT OF DIRECTOR OF MUSEUM OF IRISH INDUSTRY.

The day lectures which occupied the professors in the portion of the session which has since elapsed were delivered in the theatre of the Royal Dublin Society, and being public courses, will be fully referred in the reports of that Society and of the Committee of Lectures; but as those courses form also the elementary and introductory portions of the systematic courses which are continued in the Museum of Irish Industry, I have to report here also the amount of attendance thereon.

Dr. Kinahan's public course of 12 lectures on zoology commenced on the 12th October, and the average attendance was 116.

Dr. Barker's public course of 12 lectures on physical science commenced on October 28th, and had an average attendance of 154 persons daily.

Dr. Sullivan's public course of 12 lectures on chemistry commenced on 16th November, and was attended in average by 147 persons daily.

Mr. Jukes' course of 12 public lectures on geology commenced on the 2nd of December, and was attended in average by 189 persons daily.

In the theatre of the Museum of Irish Industry a course of evening lectures on physical geography was commenced on Monday, 2nd November, at 8 o'clock, by Mr. Jukes. This course consisted of 12 lectures, and the average attendance nightly was 348 persons.

A course of evening lectures on zoology was commenced in the theatre of the Museum of Irish Industry by Dr. Kinahan on the 30th November at 8 o'clock. This course consisted of 14 lectures, for which a fee of 2*s.* was charged. 31 admission tickets were sold, and the average attendance was 18. Six additional lectures were voluntarily given by Dr. Kinahan, in order to render the course more complete, and by his exertions a special class, for the study of the phenomena of animal life and structure by means of the microscope, was formed.

The examination of the zoological class will take place on the 9th January 1858.

Two evening classes in practical chemistry have been commenced this session by Mr. Galloway, a junior class and a senior class. 25 students have already entered for this department of instruction, which, as compared with 16, the number of last session, shows a very satisfactory increase. Further information will be found in Mr. Galloway's report.

(Signed) ROBERT KANE,
Director of the Museum of Irish Industry.

7th January 1858.

APPENDIX (A.)

LIST of DONATIONS presented to the MUSEUM of IRISH INDUSTRY, from the 1st January to the 31st December 1857.

2 Fine crystals of pentagonal dodecahedron iron pyrites, from the neighbourhood of Dingle, County Kerry.—Presented by J. Beete Jukes, Esq., Local Director of the Geological Survey of Ireland.

1 Piece of ingot of German silver.
8 Articles illustrative of the fashioning of articles by cutting out.
9 Specimens illustrative of sheet metal and its use.
4 Ditto ditto.
2 Samples of wire.
3 Castings.
A button of metallic nickel.
A button of metallic cobalt.
5 Specimens of oxides of nickel and cobalt.
Presented by Messrs. Evans and Aitken, Birmingham, *per* David Forbes, Esq.

2 Specimens of anthracite coal from the lower Silurian rocks, townland of Kill, County Cavan.—Presented by E. Hudson, Esq., Dublin.
Series of specimens illustrative of some new applications of electrotyping.
A group of children in Boucher's style.
2 Small statuettes Les Moirgoneuses, after Leopold Robert.
9 Various specimens in cast iron, representing animals and arabesques, gilt and bronzed.
Presented by Mons. L'Abbé Moigno, Paris.

Series of specimens illustrating the metallic ores of Maheramenagh mines, County Fermanagh.—Presented by W. Lisabe, Esq., Dublin.

Specimens of Carrigeen or Irish moss.—Presented by Michael Higgins, Esq., Galway.

A fine collection of fossils from argillaceous beds of upper green sand.—Presented by G. Edgar Sloper, jun., Esq., Devizes.

A large collection of fossils illustrative of British strata.—Presented by Sir Roderick I. Murchison, Director of the Geological Survey, London.

A large collection of specimens of earthenware and porcelain, of various ages and countries.—Presented by the Royal Commissioners for the Exhibition of 1851.

A large collection of specimens of manufactured products and raw materials of vegetable and mineral origin.—Presented by the Royal Commissioners for the Exhibition of 1851.

APPENDIX (B.)

LIST of SPECIMENS purchased and added to the MUSEUM COLLECTIONS, from the 1st of January to the 31st of December 1857.

	£	s.	d.
Specimens of warp for looms	2	0	0
Fittings of models for looms	2	12	6
Model of a lapping machine	7	0	0
Specimens of cornelians and agates, &c.	1	0	0
Sundry fittings, &c. for models of looms	32	14	0
Model of a winding machine	5	10	0
Ditto of a loom and table for same	7	0	0
Game-pie dish, 14 in., new shape, coloured (majolica)	1	8	0
Jug, black ground, painted white enamelled imitations of Limoges	3	3	0
Bottle, green bands, gold lines and spotting, painted game on one side, painted trophies on the other, and festoons of roses and oak leaves	6	6	0

	£	s.	d.
Déjeûné teapot, leafage (majolica)	0	6	0
Bottle, pale green ground, painted wreath of blackberry and rose, flies below wreath, red and gold border	5	5	0
Specimens of various colours	0	10	0
Ten plates, assorted colours	0	4	6
Bowl and saucer	0	0	4
Specimens of Bombay buffalo horn, cut in lengths, with hollow, for knife-handles, hooks, &c.	0	1	6
Pair of Cape of Good Hope ox horns, polished, for drinking horns, &c.	1	10	0
Pair of polished bison horns	0	7	6
Ditto of large buffalo horns, used for dressing-combs as well as handles	0	12	6
Pair of buffalo horns	0	2	0
Ditto of Bombay buffalo horns, used for dressing-combs, and handles, &c.	0	2	6
Pair of Scotch tup horns, used for hooks, scales, wool-combs, &c.	0	5	0
Pair of foreign sheep or goat horns (not imported, except as curiosities)	0	1	0
Model of a silk winding machine	10	0	0
Piece of landscape marble	0	5	0
German silver spoon	0	2	6
Bouquet of feather flowers	2	0	0
Model of an index machine	8	5	0
Nine specimens of Sheppy London clay fossils, consisting of crabs, starfish, and fish heads	0	5	0
A very extensive collection of pottery ware, showing the different stages of the manufacture from the raw material to the finished article	67	12	2
Putting in order and arranging the collection of zoological specimens	30	0	0
A series of specimens, illustrating the manufacture of needles, steel wire, music wire, reed wire, chronometer wire, watch-spring wire, and hackles; also several marks of iron, showing the kinds of steel they make	19	5	0
Specimens of glycerine	1	6	8
Series of models of the steel manufactory, consisting of converting, melting, and sheet-rolling mill furnaces, rolling mill and forge	60	0	0
A large collection of chisels, drills, nail cutters, axes, dies, planing tools, gouges, taps, edge tools, razors, plane-irons, and specimens of bar iron; also models of sheet, furnace, and forge hearth, props for forge hammers, pulling-out tongs, ingot moulds, ladle to smoke ingot moulds with coal tar, melting-pot, bar for removing slag from melting-pots, poker for arranging the fire, hearth for forges, charger to feed melting-pots when in furnace, tongs for removing ingots, furnace hammer, &c. &c.	10	18	3
Series of models of a potter's lathe and tools	11	0	0
Twenty-eight specimens, of various colours, used in the manufacture of pottery-ware, &c.	7	15	0
Two pieces of polished mica	0	6	0
Crystallized mica	0	3	0
Two paintings on mica, from India	0	7	0
Labradorite, polished	1	0	0
Crystals of augite, embedded in basalt	0	4	0
Crystals of selenite (London)	0	2	0
Crystallized selenite, from a coal mine near Newcastle-on-Tyne (very delicate)	0	10	0
Transparent Iceland spar	2	10	0
Crystallized salt	0	3	0
Silvered bowl and gilded globe	0	13	6

APPENDIX (C.)

EXAMINATION in PHYSICAL SCIENCE (Day Class).—Session of 1856–57.

Examiner, WILLIAM BARKER, M.D., M.R.I.A.

Total number of marks, 1,000.

Prizes.

1st. Christopher M'Cready.
2nd. James Dry.
3rd. Alfred G. Foot.

EXAMINATION in CHEMISTRY.—Session of 1856–57

Examiner, WILLIAM K. SULLIVAN, Ph. D., M.R.I.A.

Total number of marks, 1,000.

Prizes.

1st. Edward J. Wood.
2nd. Christopher M'Cready.
3rd. George Banon.

EXAMINATION in GEOLOGY.—Session of 1856–57.

Examiner, J. BEETE JUKES, M.A., F.R.S., M.R.I.A.

Total number of marks, 1,000.

Prizes.

1st. Edward J. Wood.
2nd. Christopher M'Cready.
3rd. Robert Craig.

EXAMINATION in PHYSICAL SCIENCE (Evening Class).—Session of 1856–57.

Examiner, WILLIAM BARKER, M.D., M.R.I.A.

Total number of marks, 1,000.

Prizes.

1st. Edward J. Wood.
2nd. Frances E. Armstrong.
3rd. Christopher M'Cready.

EXAMINATION in ZOOLOGY.—Session of 1856–57.

Examiner, JOHN R. KINAHAN, M.B., M.R.I.A.

Total number of marks, 1,000.

Prizes.

1st. Frances Annie Hare.
2nd. Edward J. Wood.
3rd. Christopher M'Cready.

EXAMINATION in BOTANY.—Session of 1856–57.

Examiner, WILLIAM H. HARVEY, M.D., M.R.I.A.

Total number of marks, 1,000.

Prizes.

1st. Christopher M'Cready.
2nd. Edward J. Wood.
3rd. Frances Annie Hare.

General Examination in Geology, Zoology, Botany, Physics, and Chemistry.—Session of 1856–57.

Examiners:

J. Beete Jukes, M.A., F.R.S., M.R.I.A.
William Barker, M.D., M.R.I.A.
William H. Harvey, M.D., M.R.I.A.
William K. Sullivan, Ph.D., M.R.I.A.
John R. Kinahan, M.B., M.R.I.A.

Total number of marks, 3,000.

Prizes.

1st. Edward J. Wood.
2nd. Christopher M'Cready.
3rd. George Banon.

Medallists.

Edward J. Wood. Christopher M'Cready.
Frances Annie Hare.

APPENDIX (D.)

Summary.

The number of persons who visited the Museum from the 1st January to the 31st December 1857 inclusive was	19,774
Number of Students who visited the Library of the Museum from the 1st January to the 31st December 1857, including the usual recess	735
Dr. Barker's Systematic Lectures	607
Dr. Sullivan's Ditto	332
Professor Jukes' Ditto	1,051
Dr. Kinahan's Ditto	411
Number attended Distribution of Prizes	600
Number attended Sir R. Kane's Address	360
Professor Jukes' Free Lectures	4,178
Dr. Kinahan's Systematic Lectures	377
Total	28,425

Number of Persons who competed for Prizes during the Year 1857.

Natural Philosophy (Day Class)	17
Chemistry	12
Geology	11
Natural Philosophy (Evening Class)	20
Zoology	7
Botany	7
General Examination	6

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